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IN THE CLAIMS

1. (Currently amended) Transceiver apparatus ~~(1, 1')~~ for use in a multi-frequency communication system, comprising:

a signal processor, ~~(DDS)~~

~~a frequency conversion circuitry (3, 3')~~

an antenna-switch ~~(SW, SW')~~comprising a multi-switch, a transmission-multiplexer and a reception multiplexer, wherein said multiplexers are controllable by the signal processor,

a frequency conversion circuitry having a transmission path and a reception path, wherein each of the paths communicatively connects the signal processor and the antenna-switch, and

an antenna terminal ~~(AT, A')~~ having ~~at least one~~a plurality of antenna, each antenna having a transmission-connector for connecting the transmission path to the antenna and a reception-connector for connecting the reception path to the antenna ~~(A, A1, A2, A3, A4) characterized in that the frequency conversion circuitry (3, 3') has a transmission path (Tx, Tx') and a reception path (Rx, Rx'), wherein each of the paths communicatively connects the signal processor (DDS) and the antenna-switch (SW, SW'), the antenna-switch (SW, SW') comprises a multi-switch (MSW), a transmission-multiplexer (TxMUX) and a reception multiplexer (RxMUX), wherein said multiplexers (TxMUX, RxMUX) are controllable by the signal processor (DDS) via the multi-switch (MSW), the antenna (A, A1, A2, A3, A4) has a transmission-connector (CT1, CT2, CT3, CT4) for connecting the transmission path (Tx, Tx') to the antenna (A, A1, A2, A3, A4) and a reception-connector (CR1, CR2, CR3, CR4) for connecting the reception path (Rx,~~

PAGE 3/13 * RCVD AT 5/15/2007 7:59:15 PM [Eastern Daylight Time] * SVR:USPTO-EFXRF-5/5 * DNIS:2738300 * CSID: * DURATION (mm-ss):01-56

~~Rx') to the antenna (A, A1, A2, A3, A4)~~, wherein the antenna-switch ~~(SW, SW')~~, controllable by the signal processor, allows multi-frequency operation of the antenna-terminal ~~(A-T)~~ by combining a transmission-mode and a reception-mode of each of the plurality of antenna ~~(A, A1, A2, A3, A4)~~.

2. (Currently amended) Transceiver apparatus as claimed in claim 1, ~~characterized in that~~wherein the signal processor is an analogue-digital signal processor formed by a direct digital synthesizer ~~(DDS)~~ driven phase locked loop ~~(PLL)~~ radio frequency ~~(RF)~~ signal generator.

3. (Currently amended) Transceiver apparatus as claimed in claim 1~~-or 2~~, ~~characterized in that~~wherein the frequency conversion circuitry ~~(3, 3')~~ comprises at least one of a local oscillator ~~(O)~~ and a power divider ~~(D)~~ to supply a local oscillator power to the transmission path ~~(Tx, Tx')~~ and/or the reception path ~~(Rx, Rx')~~.

4. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein the frequency conversion circuitry ~~(3)~~ comprises a mixer device ~~(Tx2, Rx2)~~ for converting the signal between an intermediate frequency ~~(IF)~~ and a radio frequency ~~(RF)~~.

5. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein the frequency conversion circuitry ~~(3')~~ comprises a direct conversion device ~~(Tx1', Rx1')~~ for converting the signal between a base band

frequency ~~(zero IF)~~ and a radio frequency ~~(RF)~~, in particular by means of an IQ-method.

6. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein the antenna switch ~~(SW, SW')~~ comprises a matching unit ~~(6)~~ formed as a frequency regulated matching filter ~~(FIG. 8)~~ in order to provide an optimal matching factor for the antenna.

7. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein the antenna switch ~~(SW, SW')~~ comprises a bus connection ~~(6')~~ to the signal processor ~~(DDS)~~, wherein the bus-connection ~~(6')~~ is formed as a matching network.

8. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein the antenna switch ~~(SW, SW')~~ further comprises a beam forming matrix device, in particular a Butler-output-matrix ~~(BM)~~ selected from the group consisting of: a 4x4, a 8x8 and a 16x16 Butler output matrix.

9. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein matching units ~~(MF1, MF2, MF3, MF4)~~ are provided inside the Butler-matrix ~~(BM)~~, in particular a modified Butler-output matrix output/input is formed as a frequency regulated matching filter ~~(FIG. 10)~~ in order to provide an optimal matching factor for the antenna.

10. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein the antenna terminal ~~(AT)~~ comprises a patching unit ~~(PU)~~ formed as a low-pass-filter to improve the matching of the antenna for different frequencies and/or for different modes of a multi-frequency communication system, in particular of a mobile cellular communication system or a personal communication system.

11. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein the antenna terminal ~~(AT)~~ comprises a matching unit for the antenna, in particular an LC component ~~(L1, C1, L2, C2, L3, C3, L4, C4)~~, in order to provide an optimal matching factor for the antenna.

12. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein the antenna terminal ~~(AT)~~ comprises at least two ~~(FIG. 6)~~, in particular four ~~(FIG. 3)~~, antennas.

13. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein the antenna is formed as an s-loop antenna having two ends ~~(CP1, CP2)~~ formed as the transmission connector and/or the reception connector.

14. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein the antenna is configured as a copper wired antenna,

in particular as a flexible line antenna made of copper.

15. (Currently amended) Transceiver apparatus as claimed in claim 1~~one of the preceding claims~~, ~~characterized in that~~wherein the antenna is configured as a SMD-planar antenna.

16. (Currently amended) Transceiver apparatus as claimed in ~~one of the preceding claims~~claim 1, ~~characterized in that~~wherein the antenna has a body and the body comprises an integrated patching ~~(PU)~~ and/or matching unit ~~(L, C)~~.

17. (Currently amended) Transceiver apparatus as claimed in ~~one of the preceding claims~~claim 1, ~~characterized in that~~wherein the antenna terminal ~~(AT)~~ forms a beam of 360 degrees, in particular the antenna beam is formed within a range of 200 degrees ~~(FIG. 11)~~.

18. (Currently amended) Transceiver apparatus as claimed in ~~one of the preceding claims~~claim 1, ~~characterized in that~~wherein the antenna beam comprises a 90 degree beam, in particular the beam is formed by a 50 degree main beam and two 20 degree side beams ~~(FIG. 12)~~.

19. (Canceled)

20. (Currently amended) Method of transceiving a multi-frequency signal in a multi-frequency communication system, comprising the steps of:

processing the signal in a signal processor, ~~(DDS)~~

~~frequency converting the signal in a frequency conversion circuitry (3, 3')~~ operating an antenna terminal ~~(AT, AT')~~ by an antenna-switch comprising a multi-switch, a transmission multiplexer and a reception multiplexer ~~(SW, SW')~~, wherein the multiplexers are controlled by the signal processor, and transceiving the signal by means of at least a selected one of a plurality of antenna ~~(A, A1, A2, A3, A4)~~ of the antenna terminal ~~(AT, AT')~~ ~~characterized in that frequency converting of the signal in the frequency conversion circuitry (3, 3') is established on a transmission path (Tx, Tx') and a reception path (Rx, Rx'), wherein each of the paths communicates the signal between the signal processor (DDS) and the antenna switch (SW)~~,

frequency converting the signal in a frequency conversion circuitry wherein frequency converting of the signal in the frequency conversion circuitry is established on a transmission path and a reception path , wherein each of the paths communicates the signal between the signal processor and the antenna switch.

wherein multi-frequency antenna terminal ~~(AT)~~ operation is established by combining a transmission-mode of the antenna and a reception-mode of the antenna ~~(A, A1, A2, A3, A4)~~, controlled by the signal processor ~~(DDS)~~, by means of: the antenna-switch ~~(SW, SW') which comprises a multi-switch (MSW), a transmission multiplexer (TxMUX) and a reception multiplexer (RxMUX), wherein the multiplexers (TxMUX, RxMUX) are controlled by the signal processor (DDS) via the multi-switch (MSW)~~, and communicating the signal between the transmission path ~~(Tx, Tx')~~ and the selected antenna via the transmission multiplexer ~~(TxMUX)~~ and a transmission connector ~~(CT1, CT2, CT3, CT4)~~ of the antenna and between the reception path ~~(Rx, Rx')~~ and the selected

antenna via the reception multiplexer ~~(RxMUX)~~ and a reception connector ~~(CR1, CR2, CR3, CR4)~~ of the selected antenna.

21. (Currently amended) Method as claimed in claim 20, characterized by directly frequency converting the signal in a frequency conversion circuitry ~~(3')~~ between a base band signal ~~(zero-IF)~~ and a radio frequency signal ~~(RF)~~.

22. (Currently amended) Method as claimed in claim 20, characterized by frequency converting the signal in a frequency conversion circuitry ~~(3)~~ between an intermediate frequency signal ~~(IF)~~ and a radio frequency signal ~~(RF)~~

23. (Currently amended) Method as claimed in ~~one of claims 20 to 22~~claim 20, ~~characterized in that~~wherein a reference of an incoming signal is processed in an antenna switch after checking a beam direction and a signal quality, in particular based on a BER-measurement.

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Canceled)

28. (Canceled)

29. (New) A communications method using a communications transceiver having multiple antennas having respective switches, a transmission path, a reception path, a transmission multiplexer, a reception multiplexer, and a processor, comprising:

the processor controlling the transmission multiplexer and the reception multiplexer such that during transmission the transmission path is coupled to a selected antenna and during reception the reception path is coupled to a selected antenna; and

the processor controlling the respective switches of the multiple antennas such that, at a particular instant in time, each of the multiple antennas is configured as either a transmit antenna or a receive antenna.

30. (New) A communications transceiver comprising:

multiple antennas having respective switches;

a transmission path;

a reception path;

a transmission multiplexer coupled to the transmission path and to multiple antennas;

a reception multiplexer coupled to the reception path and to multiple antennas; and

a processor;

wherein the processor controls the transmission multiplexer and the reception multiplexer such that during transmission the transmission path is coupled to a selected antenna and during reception the reception path is coupled to a selected antenna; and

wherein the processor controls the respective switches of the multiple antennas such that, at a particular instant in time, each of the multiple antennas is configured as either a transmit antenna or a receive antenna.